

Application No. 10/700,429
Reply to Office Action of July 11, 2005
Amendment dated January 11, 2006

REMARKS

Introduction

A three-month extension of time to respond to the July 11, 2005 Office Action is hereby respectfully requested. The Director is hereby authorized to charge \$510.00 in payment of the three-month extension-of-time fee to Deposit Account No. 06-1075 (order no.: 099999.0099). A duplicate copy of this paper is enclosed.

The specification has been amended to update a cross-reference to a related application. Claims 1-76 have been previously cancelled. Claims 77-108, 211-222, and 259-272 are currently withdrawn from consideration. Claims 109, 118, 122, 131, 135, 144, 163, 170, 179, 186, 195, and 202 have been amended to more clearly define the claimed invention. Claims 110-117, 119-121, 123-130, 132-134, 136-143, 145-162, 164-169, 171-178, 180-185, 187-194, 196-201, 203-210, and 223-258 are also currently pending in this application. No new matter has been added by the amendments to the specification and claims. Applicant reserves the right to claim any lost subject matter in a continuation or divisional application.

The specification has been objected to because of minor informalities and typographical errors.

Claims 109-210 and 223-258 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shimoji U.S. Patent 5,420,458 (hereinafter "Shimoji") and Mattox et al. U.S. Patent 4,825,277 (hereinafter "Mattox").

Reconsideration and allowance of this application in light of the following remarks is hereby respectfully requested.

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The Objections to the Specification

Cross-Reference to Related Applications

In the Office Action, the Examiner states that applicant's Preliminary Amendment contains a reference to the parent application, without specifying the then-current status of the parent application. The Examiner also notes that if the parent application has matured into a patent, the patent number and issue date must be provided.

Applicant understands the Examiner's observations to be based on the paragraph inserted before the first line of the specification, as entered in the Preliminary Amendment of November 3, 2003. Since then, parent application Serial No. 09/775,597 has been issued as a patent, parent application Serial No. 09/027,959 has been abandoned, and appropriate modifications to the specification are submitted in the above Amendment to the Specification for the Examiner's consideration and approval.

Specification Modifications

In the Office Action, the Examiner alleges that the specification is replete with mistakes, and cites three specific examples, which are addressed below. However, applicant respectfully disagrees with the Examiner's characterization of the specification, and notes that applications containing essentially the same specification have been allowed and granted as the related patents noted above.

1. Membrane

The Examiner first refers to "membrane" on page 17, lines 3-10 of the specification. The Examiner also appears to suggest a definition for membrane as "a layer derived from animal or plant origin." Finally, the Examiner states that applicant "seems to use membrane and layer interchangeably."

The cited passage treats "membrane" and "layer" as distinct, but related terms. Specifically, referring to Figure 3b, lines 4-7 on page 17 recite: "[t]he thickness of the dielectric membrane 20, 36 may vary from less than 2 μm to over 15 μm per layer of interconnect metallization layer 35." Figure 3b shows three layers of metallization or metallization layers 35. The dielectric membrane 20, 36 is also shown in Figure 3b. The cited passage means therefore, in this context, that the thickness of the dielectric membrane 20, 36 may vary from less than 6 μm to over 45 μm , that is, 3 (the number of metallization layers 35) multiplied by less than 2 μm to over 15 μm .

Concerning the Examiner's apparent definition for "membrane," applicant acknowledges that there may be instances where such a definition applies, however, applicant very respectfully submits that those skilled in the art would recognize a broader understanding of "membrane" upon full consideration of the application.

2. Passivation

The Examiner also states that "isolation" and "passivation" are used interchangeably on page 24, line 23 of the specification¹. In response, submitted above for the Examiner's consideration and approval is a change to the specification, which applicant respectfully submits even more clearly describes the cited passage.

3. Optical Signal Fluence

In reference to page 30 of the specification, the Examiner also alleges that "optical signal fluence" is used contrary to normal English. Applicant respectfully submits that those skilled in the art understand the term "fluence" to mean a measure of time-integrated particle flux given as particles per square centimeter (joules/cm²)². An electromagnetic radiation transmission such as an "optical signal" has associated with it a fluence, as defined above. Thus, applicant respectfully submits that those skilled in the art understand the phrase "optical signal fluence" to mean fluence associated with a given optical signal.

Applicant is pleased to correct or address any additional perceived errors in the specification that the Examiner wishes to bring to applicant's attention. Applicant respectfully submits that the objections to the specification be withdrawn.

¹ Applicant believes the Office Action was intended here to refer to page 24, line 22.

² See, for example
<http://www.photonics.com/dictionary/index.asp?url=lookup&entrynum=1984>.

The Rejections Based on 35 U.S.C. § 103

The Examiner has rejected claims 109-210 and 223-258 under 35 U.S.C. § 103(a) as being unpatentable over Shimoji and Mattox. Applicant respectfully traverses.

Claims 179-194 and 247-252

As defined by applicant's amended independent claim 179, a method of making an integrated circuit includes providing a thin substrate, forming on the thin substrate circuitry having a plurality of active devices, "wherein the integrated circuit is elastic while retaining its structural integrity, and wherein the integrated circuit has a uniform thickness throughout a full extent thereof."

On page 4, lines 6-8 of the Office Action, the Examiner contends that Shimoji teaches (at column 3, lines 48 and 65-68) forming a thin substrate 21 with formation regions 51 and 52 thereon. Nowhere does Shimoji show or suggest making an integrated circuit by forming a thin substrate, "wherein the integrated circuit has a uniform thickness throughout a full extent thereof," as required by applicant's amended independent claim 179. Instead, Shimoji etches portions of the substrate 21 to form recesses 8 under regions 51 and 52, while leaving portions of the substrate 21, as clearly shown in FIG. 2. Shimoji "does not allow the silicon substrate to be formed thin throughout, . . . therefore, [the resulting semiconductor] has a sufficient strength," (Shimoji, column 5, lines 23-28). Therefore, Shimoji teaches away from a circuit having "a uniform thickness throughout a full extent thereof," as required by applicant's amended independent claim 179.

Furthermore, nowhere does Shimoji or Mattox show or suggest making an integrated circuit, "wherein the integrated circuit is elastic while retaining its structural integrity," as required by applicant's amended independent claim 179. However, on page 4, lines 11 and 12 of the Office Action, the Examiner contends that Mattox teaches (at column 9, lines 1-13) an integrated circuit that is substantially flexible while retaining its structural integrity. Applicant respectfully submits that no such support is present in the specification of Mattox. Not at column 9, lines 1-13, nor anywhere else in the specification for that matter, does Mattox teach or suggest that the integrated circuit is or could be elastic or make any claim regarding the structural integrity of the integrated circuit. Instead, Mattox simply teaches oxy-nitride plugs 58 (see, e.g., FIGS. 2D and 2I), which do not form a layer over active devices but instead are used as isolation walls to fill trenches between active devices. These isolation walls do not provide for an integrated circuit that "is elastic while retaining its structural integrity," as required by applicant's independent claim 179.

Therefore, for at least the foregoing reasons, applicant respectfully submits that independent claim 179, and any claims dependent therefrom, including claim 180-194 and 247-252, are allowable over Shimoji and Mattox. Applicant respectfully requests, therefore, that the rejection of claims 179-194 and 247-252 under 35 U.S.C. § 103(a) be withdrawn.

Claims 109-121, 148-152, and 223-228

Applicant respectfully submits that independent claim 109, and any claims dependent therefrom, including claims 110-121, 148-152, and 223-228, are allowable over Shimoji and Mattox for at least the same reasons claim 179 is patentable over Shimoji and Mattox. Specifically, the method of claim 109 includes forming a thin substrate, forming on the substrate circuitry including integrated circuits having active devices, wherein at least one of the integrated circuits has a uniform thickness throughout a full extent thereof, and wherein the integrated circuit is substantially flexible while retaining its structural integrity..

Applicant respectfully requests, therefore, that the rejection of claims 109-121, 148-152, and 223-228 under 35 U.S.C. § 103(a) be withdrawn.

Claims 122-134, 153-157, and 229-234

Applicant respectfully submits that independent claim 122, and any claims dependent therefrom, including claims 123-134, 153-157, and 229-234, are allowable over Shimoji and Mattox for at least the same reasons claim 179 is patentable over Shimoji and Mattox. Specifically, the method of claim 122 includes forming a thin substrate, forming on the substrate circuitry including integrated circuits having active devices, wherein at least one of the integrated circuits has a uniform thickness throughout a full extent thereof, and wherein the integrated circuit is elastic while retaining its structural integrity. Applicant respectfully requests, therefore, that the rejection of claims 122-134, 153-157, and 229-234 under 35 U.S.C. § 103(a) be withdrawn.

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Claims 135-147, 158-162, and 235-240

Applicant respectfully submits that independent claim 135, and any claims dependent therefrom, including claims 136-147, 158-162, and 235-240, are allowable over Shimoji and Mattox for at least the same reasons claim 179 is patentable over Shimoji and Mattox. Specifically, the method of claim 135 includes forming a thin substrate, forming on the substrate circuitry including integrated circuits having active devices, wherein at least one of the integrated circuits has a uniform thickness throughout a full extent thereof, and wherein the integrated circuit is substantially flexible and elastic while retaining its structural integrity. Applicant respectfully requests, therefore, that the rejection of claims 135-147, 158-162, and 235-240 under 35 U.S.C. § 103(a) be withdrawn.

Claims 163-178 and 241-246

Applicant respectfully submits that independent claim 163, and any claims dependent therefrom, including claims 164-178 and 241-246, are allowable over Shimoji and Mattox for at least the same reasons claim 179 is patentable over Shimoji and Mattox. Specifically, the method of claim 163 includes providing a thin substrate, forming on the substrate circuitry having active devices, wherein the integrated circuit is substantially flexible while retaining its structural integrity, and wherein the integrated circuit has a uniform thickness throughout a full extent thereof. Applicant respectfully requests, therefore, that the rejection of claims 163-178 and 241-246 under 35 U.S.C. § 103(a) be withdrawn.

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Claims 195-210, and 253-258

Applicant respectfully submits that independent claim 195, and any claims dependent therefrom, including claims 196-210 and 253-258, are allowable over Shimoji and Mattox for at least the same reasons claim 179 is patentable over Shimoji and Mattox. Specifically, the method of claim 195 includes providing a thin substrate, forming on the substrate circuitry having active devices, wherein the integrated circuit is substantially flexible and elastic while retaining its structural integrity, and wherein the integrated circuit has a uniform thickness throughout a full extent thereof. Applicant respectfully requests, therefore, that the rejection of claims 195-210 and 253-258 under 35 U.S.C. § 103(a) be withdrawn.

Conclusion

The foregoing demonstrates that claims 109-210 and 223-258 are allowable. This application is therefore in condition for allowance. Reconsideration and allowance are accordingly respectfully requested.

Respectfully submitted,



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